

**GEOTECHNICAL REPORT
PISCATAQUA RIVER NAVIGATION
IMPROVEMENT PROJECT (AREA 3)
CONTRACT NO. DACW33-90-D-0006
JANUARY 2, 1991
DELIVERY ORDER NO. 0002**

PREPARED FOR:

Department of the Army
N.E. Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254-9149
Athena C. Thomas

PREPARED BY:

GZA GeoEnvironmental, Inc.
380 Harvey Road
Manchester, New Hampshire

January 1992
GZA File No. 20661
GZA Drilling File No. 14100.2

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TABLE 1	SUMMARY OF DAILY ACTIVITIES
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1.0 SCOPE OF INVESTIGATION

1.1 PROJECT

The project included performing probes and borings for the Piscataqua River Navigation Improvement Project (Area 3), located in Portsmouth Harbor, Portsmouth, New Hampshire. The purpose of the explorations was to determine the occurrence of bedrock down to a dredge depth of -37 feet below mean low water (MLW). The project Corps of Engineers contact was Mr. Yuri Yatsevitch.

1.2 SCOPE

The scope of work that was requested is provided on Attachment No. 1 of GEB Requisition No. 91-6 as amended on March 5, 1991. These documents are attached in Appendix A. The scope of work performed for this investigation is summarized below:

- a. Performed forty-one machine probes.
- b. Drilled three test borings.
- c. Provided a geotechnical inspector to log the explorations.
- d. Prepared this report.

Survey support and tide gage readings were provided by the Government.

2.0 QUALITY CONTROL

2.1 CERTIFICATION

GZA GeoEnvironmental, Inc. certifies that the information provided in this report has been reviewed and that to the best of our knowledge, this report documents our actions associated with this project, as well as the data generated.

2.2 EQUIPMENT

Two equipment setups were used for this project. The first, Platform 1, was abandoned without completing any machine probes or borings as site conditions would not allow the equipment to move safely to a test location. Platform 2 was used for completing the project. A data sheet for Platform 2 is attached in Appendix B.



- a. Platform 1:
 - . 10' x 20' barrel float barge with anchors;
 - . 18' metal work boat;
 - . 12' aluminum skiff; and
 - . Acker Model WB skid-mounted drill rig.
- b. Platform 2
 - . 73' long work barge "Knotts Island";
 - . 18' metal work boat; and
 - . Acker Hillbilly drill rig.

2.3 PROCEDURES

2.3.1 Machine Probes

The forty-one probes consisted of driving a blunt-ended NW-sized drill rod with a 300-pound hammer falling 24 inches. Probes were terminated either at elevation 40 feet (MLW), 50 blows with no penetration, or bouncing refusal. Blow counts were recorded for each foot of penetration in soil down to termination.

2.3.2 Borings - B-21, B-31A, B-47

The three borings were drilled in accordance with ASTM Method 1586 using a 24-inch long, 2-inch outside diameter split spoon sampler driven with a 140-pound hammer. Sampling was continuous to the required depth for B-21 and B-31A. Continuous sampling for B-47 extended to refusal in weathered rock, then the boring was advanced an additional 9 feet using NW-sized rock coring methods. The borehole was maintained during drilling with N-sized drill casing. Blow counts were recorded for each 6-inch increment of penetration. Rock coring advance rates were recorded in 1-foot increments.

2.3.3 Survey and Depth Measurements

Probe and boring locations were established in the field by the Corps of Engineers surveyors. The drilling platform was positioned as directed by the Corps of Engineers whom then determined the actual probe/boring location. A final location plan of the

probes and borings will be provided by the Corps of Engineers separate from this report. Boring locations provided by the Corps of Engineers are indicated on the logs. Two probes do not have locations (2 and 54).

Reference elevations were provided by the Corps of Engineers from a tide gage located in the vicinity of the site. The tide gage readings reference mean low water (MLW). Tide gage readings were obtained at the start of each probe and are indicated on the logs.



Depths noted on the field logs reference the water surface as 0 feet. Probes were generally completed within 15 minutes of the respective tide gage reading. Borings took longer to drill; subsequently, tide gage elevations were obtained before and after the boring was drilled and are noted on the logs.

Water depths were obtained at the start of each probe or boring by dropping a 300-pound weight and tape to the bottom and measuring the distance to the water surface.

3.0 SUMMARY OF DAILY ACTIVITIES

Site work was performed in two phases.

Phase 1 January 13 through January 24, 1991 used Platform 1. No drilling was performed from this platform or during this phase due to rough water relative to the size of the Platform 1.

Phase 2 March 27 through April 11, 1991 used Platform 2.

A daily summary of activity at the site is provided on Table 1.

4.0 CHAIN OF CUSTODY

Soil and rock samples recovered from the borings were transported by the driller to GZA Drilling, Inc. in Brockton, Massachusetts until completion of the drilling. The samples were then delivered to the Corps of Engineers, 424 Trapelo Road, Waltham, Massachusetts. Rock core was delivered on July 29, 1991 as indicated on the transmittal attached in Appendix C.

5.0 FIELD LOGS

Field logs were developed by the geotechnical inspector in the field. The logs were typed and reviewed for quality control in the office. The typed logs are attached in Appendix D.



TABLE

TABLE 1
SUMMARY OF DAILY ACTIVITIES

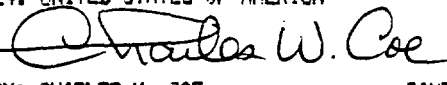
DATE	TIME START/END		STANDBY (hrs)	WORK (hrs)	LOCATION BORING/PROBE	DAILY TOTAL DRILLED (ft)	COMMENT
1/13/91						0	1
1/14/91	1200	1400				0	2
1/15/91	0700	1500	1			0	2
1/16/91	0700	1300	6			0	3
1/17/91			2			0	
1/21/91	0500	0930	4			0	3
1/22/91	0700	1500	8			0	4
1/23/91	0930	1730				0	5
1/24/91	0600	1300				0	6
3/26/91			1			0	
3/27/91	0700	1730	7.5	0.5		0	7
3/28/91	0700	1500	5			0	8,9
3/29/91	0700	1830	3.2	8	2,3A,5	98.9	10
4/1/91	0700	1530		8	19A,23A,25,27,29A	212.0	
4/2/91	0700	1530		8.3	13,14,15,16A,18,30,32,33	326.8	10
4/3/91	0600	1830		12.5	34,35,36,37,38,39,40	300.1	
4/4/91	0700	1530		7.8	21	41.6	
4/5/91	0700	1530		6.6	42,43,44,45,50,52	178.5	
4/8/91	0600	1900		13	7A,8,9A,11,12,31A	204.8	11
4/9/91	0700	1530		8	2A,41,49,51,53,54	162.0	
4/10/91	0700	1530		8	46,47	46.6	
4/11/91	0700	1530	2			0	12

Comments:

1. Mobilization to site and meet with Steve Johnson (Corps of Engineers) to review job.
2. Assemble Platform 1 float barge and equipment check out.
3. Repair leaky boat.
4. Water too rough to work with Platform 1.
5. Water too rough for Platform 1. Meet with Corps of Engineers to discuss job.
6. Demobilize Platform 1 and equipment from site.
7. No drilling, current too strong.
8. Added drill rod guide to hold rods in strong current.
9. No drilling, thick fog.
10. Current too strong to lift anchors and move.
11. Thick fog in morning delayed start to 1000 hours.
12. Demobilization.

APPENDIX A

REQUESTED SCOPE OF WORK AND AMENDMENT

ORDER FOR SUPPLIES OR SERVICES				Form Approved OMB No. 0734-0137 Expires Jul 31, 1999		PAGE 1 OF 1	
1. CONTRACT/PURCH ORDER NO. DACW339000003		2. DELIVERY ORDER NO. 0002		3. DATE OF ORDER 01/02/91		4. REQUISITION/PURCH REQUEST NO. 55131603600005	
5. ISSUED BY Dept. of the Army N. E. Division, Corps of Engrs 424 Trapelo Road Waltham, MA 02254-9149 Athena C. Thomas (517)-647-9747				6. ADMINISTERED BY CODE EMPTY		7. DELIVERY FOB [] DEST [X] OTHER (see schedule if other)	
9. CONTRACTOR NAME AND ADDRESS GZA DRILLING, INC. 1215 W. CHESTNUT STREET BROCKTON, MA 02401-				10. DELIVER TO FOB POINT BY See Block 19		11. MARK IF BUS. IS [] SMALL [] SMALL DISADVANTAGED [] WOMEN-OWNED	
14. SHIP TO Geotechnical Engineering Division, Engineering Directorate, at issuing office DACW339000006/0002				15. PAYMENT WILL BE MADE BY Finance & Accounting Officer U.S.A. Engr. Div., New England 424 Trapelo Road Waltham, MA 02254-9149		13. MAIL INVOICES TO SEE BLOCK 15	
16. DELIVERY <input checked="" type="checkbox"/> This delivery order is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.							
PURCHASE Reference your furnish the following on terms specified herein.							
ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.							
NAME OF CONTRACTOR		SIGNATURE		TYPED NAME AND TITLE		DATE SIGNED	
If this box is marked, supplier must sign Acceptance and return the following number of copies:							
17. ACCOUNTING AND APPROPRIATION DATA/LOCAL USE 96X3122 Construction General CE CIVIL SB001304JAPA003 (MD) AE 285							
18. ITEM NO.	19. SCHEDULE OF SUPPLIES/SERVICE	20. QUANTITY ORDERED/ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT		
000702	Furnish necessary supplies and services to complete four (4) test borings in Portsmouth Harbor, New Hampshire, in accordance with attached Scope of Work identified as "ATTACHMENT NO. 1, GEB REQUISITION NO. 91-6"	1	JB	3000.000000	3000.00		
**CONTRACT 0003	GEOTECHNICAL REPORT (PRICE EXPRESSED AS 50% OF LINE ITEM 0001 OR 0003) Delivery Order 0002 DELIVERY DATE: 03/20/91 GEOTECHNICAL INSPECTOR	120	HR	50.000000	6000.00		
*If quantity accepted by the Government is same as quantity ordered, indicate by x. If different, enter actual quantity accepted below quantity ordered and encircle.		24. UNITED STATES OF AMERICA  BY: CHARLES W. COE		25. TOTAL 29. DIFFERENCES		30. INITIALS	
26. QUANTITY IN COLUMN 20 HAS BEEN [] INSPECTED [] RECEIVED [] ACCEPTED AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED		27. SHIP. NO. [] PARTIAL [] FINAL		28. D.O. VOUCHER NO.		31. AMT VERIFIED CORRECT F:	
DATE SIGNATURE OF AUTHORIZED GOVERNMENT REP.		31. PAYMENT [] COMPLETE [] PARTIAL [] FINAL		32. PAID BY		33. CHECK NUMBER	
36. I certify this account is correct and proper for payment		DATE SIGNATURE AND TITLE OF CERTIFYING OFFICER		34. BILL OF LADING NO.		35. S/R VOUCHER NO.	
37. REC'D AT	38. RECEIVED BY	39. DATE REC'D	40. TOTAL CONT.	41. S/R ACCOUNT NUMBER	42. S/R VOUCHER NO.		

ATTACHMENT NO. 1

GEB REQUISITION NO. 91-6

SCOPE OF WORK

PROJECT: Probes and borings.

SITE: Portsmouth Harbor, Piscataqua River Navigation Improvement Project (Area 3) (Figure 1)

PURPOSE: To determine occurrence of bedrock down to dredge depth of -37 feet MLW.

1. SCOPE OF INVESTIGATIONS.

A. Fifty machine probes using a 300-pound hammer shall be done at the locations shown on maps provided separately. Probe locations are generally on a 50-foot grid. Depths shall be to -40 feet MLW or refusal. Refusal is defined as 50 blows with no penetration or bouncing refusal.

B. Four test borings shall be drilled to -40 feet MLW or until 10 feet of rock core has been recovered. Boring locations are shown on maps provided separately. Up to four additional test borings shall be drilled to verify probe results at locations to be determined in the field by the Government.

C. The Contractor shall provide a geotechnical inspector to log the explorations and prepare a report.

D. Survey support shall be provided by the Government. The Contractor shall place Government-furnished EDM mirrors on board the floating plant for use in positioning over the exploration points. The Government shall set up tide gages. Communication between floating plant and shore shall be by radio.

E. Work shall be performed between January 14 and February 15, 1991.

2. SITE CONDITIONS. The site is in open water in Portsmouth Harbor (Figure 1). Water depths at exploration locations vary from about -8 feet MLW to -30 feet MLW. The mean tide range is 8.4 feet and the spring range is 9.7 feet. The average current velocity at peak tide periods in the main channel varies from 2.6 to 4.0 knots. The work site is well protected from wind and wave attack.

3. RIGHT-OF-ENTRY. Right-of-entry have been obtained by the Government.

4. COORDINATION. The Corps of Engineers points-of-contact are Yuri Yatsevitch at 617-647-8387 for field work and Steve Johnston at 617-647-8527 for surveys. The Government points-of contact shall be notified one week prior to the start of field work.

GZA DRILLING, INC.

ITEM NO.	SCHEDULE OF SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT-PRICE	AMOUNT
0003 (continued)					
	**CONTRACT DELIVERY DATE:02/15/91				
0004	GEOTECHNICAL INSPECTOR - STANDBY TIME	32	HR	48.000000	1536.00
	**CONTRACT DELIVERY DATE:02/15/91				
0005	PER DIEM - OVERNIGHT STAY	17	HR	60.000000	1020.00
	**CONTRACT DELIVERY DATE:02/15/91				
0006	MILEAGE FROM WALTHAM, MA AND RETURN	300	MI	2.000000	600.00
	**CONTRACT DELIVERY DATE:02/15/91				
0015	SAMPLE DELIVERY	1	JB	125.000000	125.00
	**CONTRACT DELIVERY DATE:02/15/91				
0016	MOBILIZATION AND DEMOBILIZATION	1	JB	300.000000	300.00
	**CONTRACT DELIVERY DATE:02/15/91				
0018	MILEAGE FROM/TO CONTRACTOR'S MAIN EQUIPMENT STORAGE SITE. SITE LOCATED IN BROCKTON, MA.	300	MI	2.000000	600.00
	**CONTRACT DELIVERY DATE:02/15/91				
0020	STANDBY TIME/ON SITE MOVES	16	HR	130.000000	2080.00
	**CONTRACT DELIVERY DATE:02/15/91				
0028	12 FT. BOAT	17	DA	150.000000	2550.00
	**CONTRACT DELIVERY DATE:02/15/91				
0029	16 FT. BOAT	7	DA	175.000000	1225.00
	**CONTRACT DELIVERY DATE:02/15/91				
0030	OPERATOR FOR 12 FT. OR 16 FT. BOAT	7	DA	290.000000	2030.00
	**CONTRACT DELIVERY DATE:02/15/91				
0031	STANDBY TIME	8	HR	36.250000	290.00

GZA DRILLING, INC.

ITEM NO.	SCHEDULE OF SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT-PRICE	AMOUNT
0031 (continued)					
	**CONTRACT DELIVERY DATE:02/15/91				
0033	320 SQUARE FOOT FLOAT	1	JB	1000.000000	1000.00
	**CONTRACT DELIVERY DATE:02/15/91				
0034	MOBILIZATION AND DEMOBILIZATION FOR 320 SQUARE FOOT FLOAT	1	JB	3000.000000	3000.00
	**CONTRACT DELIVERY DATE:02/15/91				
0035	ON-SITE MOVES	1	JB	1200.000000	1200.00
	**CONTRACT DELIVERY DATE:02/15/91				
0043	0 - 30 FT. DEPTH	120	LF	18.000000	2160.00
	**CONTRACT DELIVERY DATE:02/15/91				
0056	MACHINE PROBES, 300 LB. HAMMER (5 FT. MINIMUM TO 40 FT. MAXIMUM DEPTH)	800	LF	7.000000	5600.00
	**CONTRACT DELIVERY DATE:02/15/91				
0062	BX, NX SIZE	120	LF	11.000000	1320.00
	**CONTRACT DELIVERY DATE:02/15/91				
0081	BWX SIZE AND/OR BWM	80	LF	30.000000	2400.00
	**CONTRACT DELIVERY DATE:02/15/91				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE OF PAGES

1 3

2. AMENDMENT/MODIFICATION NO.

0002-01

3. EFFECTIVE DATE

03/05/91

4. REQUISITION/PURCHASE REQ. NO.

5. PROJECT NO. (if applicable)

8. ISSUED BY

CODE

961316

~~XXXXXXXXXXXXXXXXXXXX~~

CODE

EMPTY

Dept. of the Army
N. E. Division, Corps of Engrs
424 Trapelo Road
Waltham, MA 02254-9149

PROJECT: Indefinite Delivery Contract
for Services and Equipment to Conduct
Geotechnical Exploratory Work, Various
Locations in New England

Buyer/Symbol: Thomas/CENED-CT-C Phone: 617-647-8747

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

GZA DRILLING, INC.

1215 W. CHESTNUT STREET
BROCKTON

MA 02401-

Vendor ID 00003588.

(X)

9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

10A. MODIFICATION OF CONTRACT/ORDER NO.

DACW33-90-0-0006

0002

10B. DATED (SEE ITEM 13)

90 SEP 18

X

CODE

ONT30

FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

96X3122 Construction General CE CIVIL 8B001304JAPA003 (MD) AE 285

\$10,107.00

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS,
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(X) A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103 (b).

X C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
Contract Clause I.45, CHANGES--FIXED-PRICE (AUG 1987)

D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☐ is not, ☒ is required to sign this document and return 2 copies to the issuing office.14. DESCRIPTION OF ~~XXXXXXXXXX~~ MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

(Modification is necessary because the site conditions for drilling were found to be more adverse than anticipated requiring a larger floating plant. Since the currents are too strong for the smaller float a barge with spud anchors is needed. An equitable adjustment in amount and time is warranted therefor.)

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)

GZA DRILLING, INC.

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)

CHARLES W. COE, Director of Contracting

15B. CONTRACTOR/OFFEROR

15C. DATE SIGNED

16B. UNITED STATES OF AMERICA

16C. DATE SIGNED

(Signature of person authorized to sign)

BY

(Signature of Contracting Officer)

5 MAR '91

SF 30 CONTINUATION SHEET

DELIVERY ORDER NO. 0002: 1/ The Line Items listed below are changed to read as follows:

CONTRACT LINE ITEM	SCHEDULE OF SUPPLIES/SERVICES	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
0003	GEOTECHNICAL INSPECTOR	90	HR	50.00	4,500.00
0004	GEOTECHNICAL INSPECTOR STANDBY TIME	16	HR	48.00	768.00
000702	GEOTECHNICAL REPORT (PRICE EXPRESSED AS 50% OF LINE ITEM 0003)	1	JB	2,250.00	2,250.00
0016	MOBILIZATION AND DEMOBILIZATION	2	JB	300.00	600.00
0028	12 FT. BOAT	10	DA	150.00	1,500.00
0043	0 - 30 FT. DEPTH	50	LF	18.00	900.00
0056	MACHINE PROBES, 300 LB. HAMMER (5 FT. MINIMUM TO 40 FT. MAXIMUM DEPTH)	500	LF	7.00	3,500.00
0062	BX, NX SIZE	50	LF	11.00	550.00

2/ Add the following new Line Items:

0038	1500 SQ. FT. BARGE WITH SPUD ANCHORS	7	DA	1,500.00	10,500.00
0039	STANDBY TIME FOR 1500 SQ. FT. BARGE WITH SPUD ANCHORS	70	HR	187.50	13,125.00
0082	NWX SIZE AND/OR NWM	50	LF	40.00	2,000.00

3/ Delete the following Line Items:

0005	PER DIEM OVERNIGHT STAY	17	HR	60.00	1,020.00
------	----------------------------	----	----	-------	----------

0034	MOBILIZATION AND DEMOBILI- ZATION FOR 320 SQ. FT. FLOAT	1	JB	3,000.00	3,000.00
0035	ON-SITE MOVES	1	JB	1,200.00	1,200.00
0081	BWX SIZE AND/OR BWM	80	LF	30.00	2,400.00

4/ The ESTIMATED TOTAL (BLOCK 25) is increased by "\$10,107.00."

5/ Substitute the Scope of Work for Delivery Order 0002 entitled "ATTACHMENT NO. 1, GEB REQUISITION NO. 91-6 SCOPE OF WORK," with "ATTACHMENT NO. 1, GED REQUISITION NO. 91-6, REVISED SCOPE OF WORK, dated 26 February 1991."

ATTACHMENT NO. 1

GED REQUISITION NO. 91-6

REVISED
SCOPE OF WORK
26 FEBRUARY 1991

PROJECT: Probes and borings.

SITE: Portsmouth Harbor, Piscataqua River Navigation Improvement Project (Area 3).

PURPOSE: To determine occurrence of bedrock down to dredge depth of -37 feet MLW.

1. SCOPE OF INVESTIGATIONS.

a. Up to thirty-eight machine probes using a 300-pound hammer shall be done at the locations shown on a map provided separately and as directed in the field by the Government. Probes are on 25-, 50- and 75-foot spacings. Depths shall be to -40 feet MLW or refusal. Refusal is defined as 50 blows with no penetration or bouncing refusal.

b. Four test borings shall be drilled to -40 feet MLW or until 10 feet of rock core has been recovered. Boring locations are shown on a map provided separately. One additional test boring shall be drilled to verify probe results at a location to be determined in the field by the Government.

c. The Contractor shall provide a geotechnical inspector to log the explorations and prepare a report.

d. Survey support shall be provided by the Government. The Contractor shall place Government-furnished EDM mirrors on board the floating plant for use in positioning over the exploration points. The Government shall set up tide gages. Communication between floating plant and shore shall be by radio. The Contractor shall contact the Government in advance of field operations to establish the procedures for radio communication.

e. Work shall be performed between January 14 and March 30, 1991.

2. SITE CONDITIONS. The site is in open water in Portsmouth Harbor. Water depths at exploration locations vary from about -8 feet MLW to -30 feet MLW. The mean tide range is 8.4 feet and the spring range is 9.7 feet. The average current velocity at peak tide periods in the main channel varies from 2.6 to 4.0 knots. The work site is well protected from wind and wave attack.

3. RIGHT-OF-ENTRY. Right-of-entry has been obtained by the Government.

4. COORDINATION. The Corps of Engineers points-of-contact are Yuri Yatsevitch at 617-647-8387 for field work and Steve Johnston at 617-647-8527 for surveys. The Government points-of contact shall be notified one week prior to the start of field work. The field inspector shall provide daily telephone reports to Mr. Yatsevitch on the progress of work. The Contractor shall notify the Coast Guard regarding his operation in the Harbor.

APPENDIX B

EQUIPMENT DATA SHEETS

BWS

JEAN
PETER TROPEANO

Boston Waterbus Services, Inc.

19 Revere Street

Lexington, Massachusetts 02173

(617) 862-7973

Specification Sheet - "KNOTT'S ISLAND"

Listed are the basic built-in features which are pertinent to your work :

1. U.S.C.G. inspected & licensed for passengers & cargo
2. 73' length 28' beam 4'6" draft
3. 18' x 66' open deck space
4. approx. 500 sq.ft. inside heated space including living accommodations
5. 15 cfm @ 125 psi filtered compressed air
6. 30 KW 115/230 AC power
7. 300 gpm @ 60 psi pumping capabilities
8. 50 ton potable water
9. 10,000 lb capacity hydraulic crane available
10. highly maneuverable (excellent for holding on-station)
11. Micrologic 5500 Loran C
12. VHF radio
13. Radar



APPENDIX C

SAMPLE TRANSMITTAL

DATE	7/29/91	JOB NO.	#20461
ATTENTION			
RE:			

TO CO of Engin
Templo RD Bldg # 142

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

- ☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
			Portsmouth Harbor,
			Rock Core 1 Core Box
			Bldg # 142
			Alto YURI

THESE ARE TRANSMITTED as checked below:

- ☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

COPY TO _____

SIGNED: Joseph P. Bruce

APPENDIX D

FIELD LOGS

[illegible]

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NH

PROBE NO. 2
SHEET 2 OF 2
FILE No. 14100.2
CHKD. BY

[illegible]

REMARKS:

PROBE NO. 2

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NH

PROBE NO. 2A
SHEET 2 OF 2
FILE No. 14100.2
CHKD. BY

[illegible]

REMARKS:

GZA

PROBE NO. 2A

GZA DRILLING, INC.				PROJECT AREA #3 PORTSMOUTH HARBOR PORTSMOUTH, NH		PROBE NO. 3A SHEET 1 OF 1 FILE No. 14100.2 CHKD. BY JEH			
1215 W. CHESTNUT ST., BROCKTON, MA 02401 (A DIVISION OF GZA GeoENVIRONMENTAL, INC.)									
FOREMAN: C. LENLING CLASSIFIED BY: INSPECTOR: D. SACKETT				BORING LOCATION AS PER USA CORPS OF ENGINEERS GROUND SURFACE ELEVATION DATE START 3/29/91 DATE END 3/29/91					
PROBE: UNLESS OTHERWISE NOTED, PROBING ACCOMPLISHED USING NW RODS, DRIVEN WITH 300 #WT FALLING 24 INCHES.				GROUNDWATER READINGS					
				DATE TIME WATER CASING STABILIZATION TIME					
CASING SIZE: OTHER:									
D C B E A L P S O T H G S				SAMPLE		R		STRATUM DESCRIPTION	
				No. PEN./ REC DEPTH (Ft.) BLOWS/12"		E M K S			
0						1		0'	
5								WATER	
10									
15									
20									
25									
30				WOR		2		26.4	
				WOR-20/0'				SOIL	
						3		27.9	
								REFUSAL	
GRANULAR SOILS Blows/Ft Density				COHESIVE SOILS Blows/Ft Density		REMARKS:			
0- 4 V. LOOSE 4-10 LOOSE 10-30 M. DENSE 30-50 DENSE > 50 V. DENSE				< 2 V. SOFT 2- 4 SOFT 4- 8 M. STIFF 8-15 STIFF 15-30 V. STIFF > 30 HARD		1. Tide +7' at 1200 hours. 2. Depth of water 26.4 at 1200 hours. 3. Probe advanced by weight of rods to 27.9' then encountered bouncing refusal. PROBE LOCATION: 87875.7956(N) 348423.2419(E)			
NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE				GZA				PROBE NO. 3A	

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A DIVISION OF GZA GeoENVIRONMENTAL, INC.)

PROJECT

AREA #3

PORTSMOUTH HARBOR

PORTSMOUTH, NH

PROBE NO. 5

SHEET 1 OF 1

FILE No. 14100.2

CHKD. BY JEH

FOREMAN: C. LENLING
CLASSIFIED BY: _____
INSPECTOR: D. SACKETTBORING LOCATION AS PER USA CORPS OF ENGINEERS
GROUND SURFACE ELEVATION _____ DATUM: WATER SURFACE
DATE START 3/29/91 DATE END 3/29/91PROBE: UNLESS OTHERWISE NOTED, PROBING ACCOMPLISHED USING
NW RODS, DRIVEN WITH 300 #WT FALLING 24 INCHES.

GROUNDWATER READINGS

DATE TIME WATER CASING STABILIZATION TIME

CASING SIZE:

OTHER:

DEPTH H	C B A L S O N W G S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC	DEPTH (Ft.)	BLOWS/12"		
0						1	0'
5							
10							
15							
					20/0"		
20						2	
						3	19'
							REFUSAL
25							
30							

GRANULAR SOILS
Blows/Ft Density0- 4 V. LOOSE
4-10 LOOSE
10-30 M. DENSE
30-50 DENSE
> 50 V. DENSECOHESIVE SOILS
Blows/Ft Density< 2 V. SOFT
2- 4 SOFT
4- 8 M. STIFF
8-15 STIFF
15-30 V. STIFF
> 30 HARD

REMARKS:

1. Tide +6.5' at 1235 hours.
2. Depth of water 19' at 1235 hours.
3. Bouncing refusal encountered at 19' depth, 20/0".

PROBE LOCATION: 87887.9549(N) 348499.2455(E)

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER
MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

PROBE NO. 5

[illegible]

[illegible]

[illegible]

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A DIVISION OF GZA GeoENVIRONMENTAL, INC.)

PROJECT
AREA #3
PORTSMOUTH HARBOR
PORTSMOUTH, NH

PROBE NO. 11
SHEET 1 OF 2
FILE No. 14100.2
CHKD. BY JEH

FOREMAN: C. LENLING
CLASSIFIED BY: _____
INSPECTOR: D. PORTER

BORING LOCATION AS PER USA CORPS OF ENGINEERS
GROUND SURFACE ELEVATION DATUM: WATER SURFACE
DATE START 4/8/91 DATE END 4/8/91

PROBE: UNLESS OTHERWISE NOTED, PROBING ACCOMPLISHED USING
NW RODS, DRIVEN WITH 300 #WT FALLING 24 INCHES.

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME
------	------	-------	--------	--------------------

CASING SIZE: OTHER:

GRANULAR SOILS Blows/Ft Density		COHESIVE SOILS Blows/Ft Density	
0- 4	V. LOOSE	< 2	V. SOFT
4-10	LOOSE	2- 4	SOFT
10-30	M. DENSE	4- 8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

1. Tide +4.3' at 1700 hours
2. Depth of water 28' At 1700 hours
3. Bouncing refusal at 37.0'

PROBE LOCATION: 87891.4658(N) 348834.8937(E)

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

PROBE NO. 11

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NH

PROBE NO. 11
SHEET 2 OF 2
FILE No. 14T00.2
CHKD. BY

DEPTH	C B A L L S O W G S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
					17		
35					23		SOIL
					35		
					50		
							37' REFUSAL
40							
45							
50							
55							
60							
65							
70							
75							

REMARKS:

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NHPROBE NO. 12
SHEET 2 OF 2
FILE NO. 14100.2
CHKD. BY

DEPTH	C B A L S O N W G S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
35					5		SOIL
					9		
					17		
					36		
					52		
40					42		
					45		
					66		
					59		
					58		
45					76		
					74-50/0"		
							REFUSAL
50							
55							
60							
65							
70							
75							

REMARKS:

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NH

PROBE NO. 13
SHEET 2 OF 2
FILE No. 14100.2
CHKD. BY

DEPTH	C B A L O W S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
					WOR		
35					10		
					24		
					24		
					32		
					41		
40					42		
					58		
					59		
					40		
					80		
45					79		
					49		
					45		
					42/6"		
						3	47.5'
50							BOTTOM OF PROBE
55							
60							
65							
70							
75							

REMARKS:

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT

AREA #3

PORTSMOUTH HARBOR,

PORTSMOUTH, NH

PROBE NO.

14

SHEET

2

OF

2

FILE NO.

14100.2

CHKD. BY

DEPTH	C B A L O N G S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
					45		
					30		
35					44		
					67		SOIL
					47		
					60/8"-50/0"	3	38.7'
40							REFUSAL
45							
50							
55							
60							
65							
70							
75							

REMARKS:

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NH

PROBE NO. 16A
SHEET 2 OF 2
FILE No. 14T00.2
CHKD. BY

DEPTH	C B A L O N G S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
35					23		
					23		
					30		
					41		
					71		
40					57		
					49		
					110		
					60/4"-50/0"		
45							
50							
55							
60							
65							
70							
75							

REMARKS:

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NH

PROBE NO. 18
SHEET 2 OF 2
FILE No. 14TDO.2
CHKD. BY

[illegible]

REMARKS:

GZA

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NHPROBE NO. 19A
SHEET 2 OF 2
FILE No. 14T00.2
CHKD. BY

DEPTH	C B A L S O N W G S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
35					WOR	3	SOIL
					WOR		
					WOR		
					14		
					17		
40					29		
					19		
					16		
45							
50							
55							
60							
65							
70							
75							

REMARKS:

41'
BOTTOM OF PROBE

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)PROJECT
AREA #3
PORTSMOUTH HARBOR
PORTSMOUTH, NHREPORT OF BORING No. B-21
SHEET 2 OF 2
FILE No. 14100.2
CHKD. BY JEH

DEPTH	C B A L L S O W M G S	SAMPLE				SAMPLE DESCRIPTION BURMISTER CLASSIFICATION	REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/6"			
35					3-5	Cored Boulder and Till	3	34.6' CORED BOULDER 36.0' TILL
		C-1	60/6	34.6-39.6	6 Min			
					3 Min			
					2 Min			
					2 Min			
					2 Min			
40		S-3	24/12	39.6-41.6	18	Very dense, gray, fine to coarse SAND, some Silt, little Gravel - TILL	4	41.6' BOTTOM OF BORING
					23-32			
					28			
45								
50								
55								
60								
65								
70								
75								

REMARKS:

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NH

PROBE NO. 23A
SHEET 2 OF 2
FILE No. 14T00.2
CHKD. BY

DEPTH	C A L S O W S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
					WOR		
35					WOR		
					12		
					41		
					58		
					66		
40					56		
					63		
					62		
					90-50/0"		
45							
50							
55							
60							
65							
70							
75							

REMARKS:

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NH

PROBE NO. 25
SHEET 2 OF 2
FILE No. 14100.2
CHKD. BY

DEPTH	C B A L O W S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
35							
					WOR	2	37' WATER
					WOR		
						3	
40				39.5-40.5	11		SOIL
				40.5-41.5	21		
				41.5-42.5	56		
				42.5-43.5	142-50/0"		
45							
50							
55							
60							
65							
70							
75							

REMARKS:

GZA DRILLING, INC. 1215 W. CHESTNUT ST., BROCKTON, MA 02401 (A Subsidiary of GZA GeoEnvironmental, Inc.)						PROJECT AREA #3 <u>PORTSMOUTH HARBOR,</u> <u>PORTSMOUTH, NH</u>		PROBE NO. 27 SHEET 2 OF 2 FILE No. 14TDO.2 CHKD. BY _____	
DEPTH	CBL SNGS	SAMPLE					REMARKS	STRATUM DESCRIPTION	
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"				
35									
40				38.7-39.5	WOR		2	38.7' _____	
				39.5-40.5	12			SOIL	
				40.5-41.5	42				
				41.5-42.5	57				
45									
50									
55									
60									
65									
70									
75									

REMARKS:

GZA PROBE NO. 27

[illegible][illegible][illegible][illegible]

REMARKS:	
GZA	PROBE NO. <u>27</u>

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NH

PROBE NO. 29A
SHEET 2 OF 2
FILE No. 14100.2
CHKD. BY

DEPTH	C B A L S O N W G S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
35					WOR	2	34.5' WATER
					WOR		
					WOR	3	SOIL
					6		
					5		
40					40		
					52		
					38		
						4	42' BOTTOM OF PROBE
45							
50							
55							
60							
65							
70							
75							

REMARKS:

[illegible]

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NHPROBE NO. 30
SHEET 2 OF 2
FILE NO. 14T00.2
CHKD. BY

DEPTH H	C B A L L S O W N G S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
35					10		SOIL
					14		
					27		
					23		
					51		
					70		
40					60/1"		39.1' REFUSAL
45							
50							
55							
60							
65							
70							
75							

REMARKS:

GZA DRILLING, INC. 1215 W. CHESTNUT ST., BROCKTON, MA 02401 (A DIVISION OF GZA GeoENVIRONMENTAL, INC.)						PROJECT AREA #3 PORTSMOUTH HARBOR PORTSMOUTH, NH			REPORT OF BORING No. B-31A SHEET 1 OF 2 FILE No. 14100.2 CHKD. BY JEH								
FOREMAN: C. LENLING CLASSIFIED BY: D. PORTER INSPECTOR: D. PORTER						BORING LOCATION AS PER USA CORPS OF ENGINEERS GROUND SURFACE ELEVATION _____ DATUM: WATER SURFACE DATE START 4/8/91 DATE END 4/8/91											
SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 In.						GROUNDWATER READINGS											
CASING: UNLESS OTHERWISE NOTED, CASING DRIVEN USING A 300 lb. HAMMER FALLING 24 In.																	
CASING SIZE: 3" (NW) OTHER:																	
SAMPLE						SAMPLE DESCRIPTION						STRATUM DESCRIPTION					
No. PEN./REC DEPTH (Ft.) BLOWS/6"						BURMISTER CLASSIFICATION											
0												0'					
5												WATER					
10																	
15																	
20																	
25																	
30																	
S-1 24/3 27'6"-29'6" 1						Very loose, gray, fine to medium SAND, some Shells, little Silt						2 27.6					
2-2												SAND,					
S-2 24/10 29'6"-31'6" 4-2						Very loose, gray, fine to medium SAND and SHELLS, little Silt, change at 31.1' to gray, fine to medium SAND, some Silt, trace Gravel - TILL						Silt, Shells					
2-3																	
S-3 24/12 31'6"-33'6" 5-5						Medium dense, gray, fine to coarse SAND, some Silt, little Gravel - TILL						3 31.1'					
S-3A						5-6						TILL					
GRANULAR SOILS Blows/Ft Density						COHESIVE SOILS Blows/Ft Density						REMARKS:					
0- 4 V. LOOSE 4-10 LOOSE 10-30 M. DENSE 30-50 DENSE > 50 V. DENSE						< 2 V. SOFT 2- 4 SOFT 4- 8 M. STIFF 8-15 STIFF 15-30 V. STIFF > 30 HARD						1. Tide +2.1 on tide board at 1100 hours. 2. Bottom plunked at 27.6' at 1100 hours. 3. S-3 is a double jarred sample. 4. Boring terminated at required depth. BORING LOCATION: 87935.7310(N) 349112.7071(E)					
NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED. FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE																	
GZA																	
BORING No.B-31A																	

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)PROJECT
AREA 33
PORTSMOUTH HARBOR
PORTSMOUTH, NHREPORT OF BORING No. B-31A
SHEET 2 OF 2
FILE No. 14100.2
CHKD. BY JEH

DEPTH H	C B A L S O N W G S	SAMPLE				SAMPLE DESCRIPTION	RE M K S	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/6"	BURMISTER CLASSIFICATION		
35		S-4	24/18	33.6-35.6	11-8	Medium dense, gray, fine to coarse SAND, some Silt, little Gravel - TILL		TILL
					9-12			
		S-5	24/8	35.6-37.6	14-10	Medium dense, gray, fine to coarse SAND, little SILT, trace Gravel - TILL		
					12-20			
40		S-6	24/6	37.6-39.6	11-12	Medium dense, gray, fine to coarse SAND, little Silt, trace Gravel - TILL		
					9-10			
		S-7	24/10	39.6-41.6	19-15	Medium dense, gray, fine to coarse SAND, little Silt, trace Gravel - TILL		
					14-18			
		S-8	24/6	41.6-43.6	21-19	Dense, gray, fine to medium SAND, some Silt, trace Gravel - TILL		
					18-20			
	45					19	4	43.6' BOTTOM OF PROBE
50								
55								
60								
65								
70								
75								

REMARKS:

GZA DRILLING, INC. 1215 W. CHESTNUT ST., BROCKTON, MA 02401 (A DIVISION OF GZA GeoENVIRONMENTAL, INC.)				PROJECT AREA #3 PORTSMOUTH HARBOR PORTSMOUTH, NH		PROBE NO. 32 SHEET 1 OF 2 FILE No. 14100.2 CHKD. BY JEH		
FOREMAN: C. LENLING CLASSIFIED BY: INSPECTOR: D. SACKETT				BORING LOCATION AS PER USA CORPS OF ENGINEERS GROUND SURFACE ELEVATION DATUM: WATER SURFACE DATE START 4/2/91 DATE END 4/2/91				
PROBE: UNLESS OTHERWISE NOTED, PROBING ACCOMPLISHED USING NW RODS, DRIVEN WITH 300 #WT FALLING 24 INCHES.				GROUNDWATER READINGS				
				DATE TIME WATER CASING STABILIZATION TIME				
CASING SIZE: OTHER:								
DEPTH		SAMPLE		REMARKS		STRATUM DESCRIPTION		
C B A L S O N W G S	No.	PEN./ REC	DEPTH (Ft.)					BLOWS /12"
0					1	0'	WATER	
5								
10								
15								
20								
25								
30								
GRANULAR SOILS Blows/Ft Density		COHESIVE SOILS Blows/Ft Density		REMARKS: 1. Tide +3.6' 2. Depth of water 33.7' 3. Bouncing refusal encountered at 41.8', 50/0". PROBE LOCATION: 87956.0904(N) 349084.5424(E)				
0- 4 V. LOOSE 4-10 LOOSE 10-30 M. DENSE 30-50 DENSE > 50 V. DENSE		< 2 V. SOFT 2- 4 SOFT 4- 8 M. STIFF 8-15 STIFF 15-30 V. STIFF > 30 HARD						
NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE				GZA				PROBE NO. 32

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NH

PROBE NO. 32
SHEET 2 OF 2
FILE No. 14T00.2
CHKD. BY

DEPTH	C B A L L S O W S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
					WOR		
35					2		
					4		
					6		
					3		
					4		
40					21		
					91		
					46/9"-50/0"		
45							
50							
55							
60							
65							
70							
75							

REMARKS:

[illegible]

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NH

PROBE NO. 33
SHEET 2 OF 2
FILE No. 14100.2
CHKD. BY

DEPTH	C B A L O N G S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
35							
					WOR	2	35.5' WATER
					WOR		
					8		
					4		
					3		
40					13		
					17		
					60		
					81		
					68		
45						3	45' BOTTOM OF PROBE
50							
55							
60							
65							
70							
75							

REMARKS:

[illegible]

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NH

PROBE NO. 34
SHEET 2 OF 2
FILE No. 14100.2
CHKD. BY

D E P T H	C A S I N G S	B L O W S	SAMPLE					R E M K S	STRATUM DESCRIPTION			
			No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"						
35								2	34.4' <u>WATER</u>			
						WOR						
						WOR						
						WOR						
						WOR-3/6"						
40						4					3	46.1' <u>SOIL</u>
						8						
						14						
						20						
						19						
45						60		3	46.1' <u>BOTTOM OF PROBE</u>			
						88						
						135						
						50/6"						
50												
55												
60												
65												
70												
75												

REMARKS:

GZA DRILLING, INC. 1215 W. CHESTNUT ST., BROCKTON, MA 02401 (A DIVISION OF GZA Geoenvironmental, Inc.)				PROJECT AREA #3 PORTSMOUTH HARBOR PORTSMOUTH, NH		PROBE NO. 35 SHEET 1 OF 2 FILE No. 14100.2 CHKD. BY JEH		
FOREMAN: C. LENLING CLASSIFIED BY: INSPECTOR: D. PORTER				BORING LOCATION AS PER USA CORPS OF ENGINEERS GROUND SURFACE ELEVATION DATUM: WATER SURFACE DATE START 4/3/91 DATE END 4/3/91				
PROBE: UNLESS OTHERWISE NOTED, PROBING ACCOMPLISHED USING NW RODS, DRIVEN WITH 300 #WT FALLING 24 INCHES.				GROUNDWATER READINGS				
				DATE	TIME	WATER	CASING	STABILIZATION TIME
CASING SIZE: OTHER:								
DEPTH	CASING SIZES	SAMPLE				REMARKS	STRATUM DESCRIPTION	
		No.	PEN./ REC	DEPTH (Ft.)	BLOWS /12"			
0						1	0'	WATER
5								
10								
15								
20								
25								
30								
GRANULAR SOILS Blows/Ft Density		COHESIVE SOILS Blows/Ft Density		REMARKS: 1. Tide +6.5' at 1740 hours 2. Depth of water 36.3' AT 1740 Hours 3. Probe terminated at required depth. PROBE LOCATION: 87947.0835(N) 348929.7566(E)				
0- 4	V. LOOSE	< 2	V. SOFT					
4-10	LOOSE	2- 4	SOFT					
10-30	M. DENSE	4- 8	M. STIFF					
30-50	DENSE	8-15	STIFF					
> 50	V. DENSE	15-30	V. STIFF					
		> 30	HARD					
NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE				GZA				
				PROBE NO. 35				

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NHPROBE NO. 35
SHEET 2 OF 2
FILE No. 14100.2
CHKD. BY

DEPTH	C A L S O N G S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
35						2	WATER 36.3'
					WOR/3"		
					WOR		
					WOR		
					WOR		
40					12	3	SOIL 47' BOTTOM OF PROBE
					14		
					13		
					55		
45					48		
					52		
					25		
50							
55							
60							
65							
70							
75							

REMARKS:

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A DIVISION OF GZA GEOENVIRONMENTAL, INC.)

PROJECT

AREA #3

PORTSMOUTH HARBOR

PORTSMOUTH, NH

PROBE NO. 36

SHEET 1 OF 2

FILE No. 14100.2

CHKD. BY JEH

FOREMAN: C. LENLING

CLASSIFIED BY:

INSPECTOR: D. PORTER

BORING LOCATION AS PER USA CORPS OF ENGINEERS

GROUND SURFACE ELEVATION

DATUM: WATER SURFACE

DATE START 4/3/91

DATE END 4/3/91

PROBE: UNLESS OTHERWISE NOTED, PROBING ACCOMPLISHED USING
NW RODS, DRIVEN WITH 300 #WT FALLING 24 INCHES.

GROUNDWATER READINGS

DATE TIME WATER CASING STABILIZATION TIME

CASING SIZE:

OTHER:

DEPTH	CBL SOG NWS	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC	DEPTH (Ft.)	BLOWS /12"		
0						1	0'
5							
10							
15							
20							
25							
30							

WATER

GRANULAR SOILS
Blows/Ft DensityCOHESIVE SOILS
Blows/Ft Density0- 4 V. LOOSE
4-10 LOOSE
10-30 M. DENSE
30-50 DENSE
> 50 V. DENSE< 2 V. SOFT
2- 4 SOFT
4- 8 M. STIFF
8-15 STIFF
15-30 V. STIFF
> 30 HARD

REMARKS:

1. Tide +6.5'
2. Depth of water 35.3'
3. Probe terminated at required depth.

PROBE LOCATION: 87943.8361(N) 348886.1277(E)

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER
MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

PROBE NO. 36

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NHPROBE NO. 36
SHEET 2 OF 2
FILE No. 14100.2
CHKD. BY

DEPTH	C B A L O W S	SAMPLE				RE M A R K S	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
35						2	35.3' WATER
				35.3-36.5	WOR		
				36.5-37.5	WOR		
				37.5-38.5	7		
				38.5-39.5	12		
40				39.5-40.5	18		
				40.5-41.5	30		
				41.5-42.5	58		
				42.5-43.5	100		
				43.5-44.5	90		
45				44.5-45.5	95		
				45.5-46.5	96	3	46.5' SOIL
50							
55							
60							
65							
70							
75							

REMARKS:

[illegible]

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NHPROBE NO. 37
SHEET 2 OF 2
FILE No. 14T00.2
CHKD. BY

DEPTH	C B L S O N G S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
35					WOR		SOIL
					WOR		
					WOR		
					WOR		
					23		
40					22		
					28		
					50		
					60		
					62		
45					55		
					52		
					55/6"		
50							
55							
60							
65							
70							
75							

REMARKS:

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NHPROBE NO. 38
SHEET 2 OF 2
FILE No. 14T00.2
CHKD. BY

DEPTH	C B A L O N G S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
35					11		
					24		
					25		
					28		
					27		
40					29		
					32		
					70		
					61		
					60		
45					69		
					52		
50							
55							
60							
65							
70							
75							

45'

REFUSAL

REMARKS:

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT

AREA #3

PORTSMOUTH HARBOR,
PORTSMOUTH, NH

PROBE NO.

SHEET 2 OF 2

FILE No. 14100.2

CHKD. BY

39

14100.2

DEPTH	C B A L S O W G S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC.	DEPTH (Ft.)	BLOWS/12"		
35					WOR	3	SOIL
					WOR		
					WOR		
					3		
					5-50/0"		
40						3	REFUSAL
45						3	REFUSAL
50						3	REFUSAL
55						3	REFUSAL
60						3	REFUSAL
65						3	REFUSAL
70						3	REFUSAL
75						3	REFUSAL

REMARKS:

[illegible]

GZA DRILLING, INC. 1215 W. CHESTNUT ST., BROCKTON, MA 02401 (A DIVISION OF GZA GeoENVIRONMENTAL, INC.)					PROJECT AREA #3 PORTSMOUTH HARBOR PORTSMOUTH, NH			PROBE NO. 43 SHEET 1 OF 1 FILE No. 14100.2 CHKD. BY JEH		
FOREMAN: C. LENLING CLASSIFIED BY: INSPECTOR: R. SHAFFNER					BORING LOCATION AS PER USA CORPS OF ENGINEERS GROUND SURFACE ELEVATION DATE START 4/5/91 DATE END 4/5/91					
PROBE: UNLESS OTHERWISE NOTED, PROBING ACCOMPLISHED USING NW RODS, DRIVEN WITH 300 #WT FALLING 24 INCHES.					GROUNDWATER READINGS					
					DATE	TIME	WATER	CASING	STABILIZATION TIME	
CASING SIZE: OTHER:										
DEPTH	CBS ALSO NWS GS	SAMPLE			REMARKS	STRATUM DESCRIPTION				
		No.	PEN./ REC	DEPTH (Ft.)			BLOWS /12"			
0						1 0'				
5										
10										
15										
20										
25										
				27.2-28.2	5					
				28.2-29.2	6					
				29.2-30.2	4					
30				30.2-31.2	8					
				31.2-31.4	19/3"					
GRANULAR SOILS Blows/Ft Density		COHESIVE SOILS Blows/Ft Density		REMARKS:						
0- 4	V. LOOSE	< 2	V. SOFT	1. Tide +5.1'						
4-10	LOOSE	2- 4	SOFT	2. Depth of water 27.2'						
10-30	M. DENSE	4- 8	M. STIFF	3. Bouncing refusal encountered at 31.4'.						
30-50	DENSE	8-15	STIFF	PROBE LOCATION: 87952.1689(N) 348631.1329(E)						
> 50	V. DENSE	15-30	V. STIFF							
		> 30	HARD							
NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL. 2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE						PROBE NO. 43				

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A Subsidiary of GZA GeoEnvironmental, Inc.)

PROJECT
AREA #3
PORTSMOUTH HARBOR,
PORTSMOUTH, NH

PROBE NO. 44
SHEET 2 OF 2
FILE No. 14100.2
CHKD. BY

[illegible]

REMARKS:

[illegible]

[illegible]

[illegible]

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A DIVISION OF GZA GeoENVIRONMENTAL, INC.)

PORTSMOUTH, NH

CHKD. BY JEH

DATE START 4/9/91 DATE END 4/9/91

OTHER:

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

PROBE NO. 51

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A DIVISION OF GZA Geoenvironmental, Inc.)

PROJECT
AREA #3
PORTSMOUTH HARBOR
PORTSMOUTH, NH

PROBE NO. 53
SHEET 1 OF 1
FILE No. 14100.2
CHKD. BY JEH

FOREMAN: C. LENLING
CLASSIFIED BY:
INSPECTOR: D. PORTER

BORING LOCATION AS PER USA CORPS OF ENGINEERS
GROUND SURFACE ELEVATION DATUM: WATER SURFACE
DATE START 4/9/91 DATE END 4/9/91

PROBE: UNLESS OTHERWISE NOTED, PROBING ACCOMPLISHED USING
NW RODS, DRIVEN WITH 300 #WT FALLING 24 INCHES.

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

CASING SIZE:

OTHER:

DEPTH	CBL ALSO NWS	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC	DEPTH (Ft.)	BLOWS /12"		
0						1	0'
5							
10							
15							
20							
25							
30						2	
				30.0-30.5	30/6"	3	30.0' SOIL
					30/0"		30.5' REFUSAL

GRANULAR SOILS Blows/Ft Density		COHESIVE SOILS Blows/Ft Density	
0- 4	V. LOOSE	< 2	V. SOFT
4-10	LOOSE	2- 4	SOFT
10-30	M. DENSE	4- 8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

1. Tide +0.7' at 1317 hours.
2. Depth of water 30.0' at 1317 hours.
3. Bouncing refusal encountered at 30.5', 30/0".

PROBE LOCATION: 87915.2494(N) 348441.1895(E)

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER
MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

PROBE NO. 53

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A DIVISION OF GZA GeoENVIRONMENTAL, INC.)

PROJECT
AREA #3
MOUTH HARBOR
TSMOUTH, NH

PROBE NO. 54
SHEET 1 OF 1
FILE NO. 14100.2
CHKD. BY JEH

FOREMAN: C. LENLING
CLASSIFIED BY: _____
INSPECTOR: D. PORTER

BORING LOCATION AS PER USA CORPS OF ENGINEERS
GROUND SURFACE ELEVATION _____ DATUM: WATER SURFACE
DATE START 4/9/91 DATE END 4/9/91

PROBE: UNLESS OTHERWISE NOTED, PROBING ACCOMPLISHED USING
NW RODS, DRIVEN WITH 300 #WT FALLING 24 INCHES.

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME
------	------	-------	--------	--------------------

CASING SIZE:

OTHER:

GRANULAR SOILS Blows/Ft Density		COHESIVE SOILS Blows/Ft Density		REMARKS:
0- 4	V. LOOSE	< 2	V. SOFT	
4-10	LOOSE	2- 4	SOFT	2. Depth of water 26.5' at 1145 hours.
10-30	M. DENSE	4- 8	M. STIFF	3. Moved off hole without doing probe because boat anchors would not hold.
30-50	DENSE	8-15	STIFF	
> 50	V. DENSE	15-30	V. STIFF	PROBE LOCATION: NOT RECORDED
		> 30	HARD	

REMARKS:

1. Tide +2.3' at 1145 hours.
2. Depth of water 26.5' at 1145 hours.
3. Moved off hole without doing probe because boat anchors would not hold.

PROBE LOCATION: NOT RECORDED

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED. FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA

PROBE NO. 54

GZA DRILLING, INC.

1215 W. CHESTNUT ST., BROCKTON, MA 02401
(A DIVISION OF GZA GeoENVIRONMENTAL, INC.)

PROJECT

AREA #3

PORTSMOUTH HARBOR

PORTSMOUTH, NH

PROBE NO.

54

SHEET

1 OF 1

FILE No. 14100.2

CHKD. BY JEH

FOREMAN: C. LENLING

CLASSIFIED BY:

INSPECTOR:

D. PORTER

BORING LOCATION AS PER USA CORPS OF ENGINEERS

GROUND SURFACE ELEVATION

DATUM: WATER SURFACE

DATE START 4/9/91

DATE END 4/9/91

PROBE: UNLESS OTHERWISE NOTED, PROBING ACCOMPLISHED USING
NW RODS, DRIVEN WITH 300 #WT FALLING 24 INCHES.

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME

CASING SIZE:

OTHER:

DEPTH H	C B A L S O N W G S	SAMPLE				REMARKS	STRATUM DESCRIPTION
		No.	PEN./ REC	DEPTH (Ft.)	BLOWS /12"		
0						1	0'
5							
10							
15							
20							
25							
30							

GRANULAR SOILS
Blows/Ft Density

0- 4	V. LOOSE
4-10	LOOSE
10-30	M. DENSE
30-50	DENSE
> 50	V. DENSE

COHESIVE SOILS
Blows/Ft Density

< 2	V. SOFT
2- 4	SOFT
4- 8	M. STIFF
8-15	STIFF
15-30	V. STIFF
> 30	HARD

REMARKS:

1. Tide +2.3' at 1145 hours.
2. Depth of water 26.5' at 1145 hours.
3. Moved off hole without doing probe because boat anchors would not hold.

PROBE LOCATION: NOT RECORDED

NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER
MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE

GZA

PROBE NO. 54